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ABSTRACT

Data are presented comparing children with learning disabilities to children with mild mental retardation, and comparing these two groups to normally achieving peers matched for chronological age (ages 6 to 8). Four studies were conducted, involving different types of oddity problems and rhyming skills. Results of the four studies indicated little difference between the level and/or quality of performance of the normally achieving group and the learning disability group, but large level and/or quality differences between the learning disability group and an age-matched mildly mentally retarded group. Data seem to indicate that children labeled learning disabled and those labeled mildly mentally retarded are cognitively quite different, validating their differential classification. Different educational programming may be required to maximize the impact of interventions with each group. (JDD)

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Cognitive Differences Between Children with Learning Disabilities and Those with Mild Mental Retardation

ED358669

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Abstract

Perhaps related to the current educational movement to move the education of mildly handicapped children back into the province of the regular classroom (REI), there can be found a growing body of literature that points to the similarities in teaching methods used to instruct children who are educationally mentally handicapped (EMH), learning disabled (LD) and, sometimes, children with behavior disorders (BD) (e.g., Algozzine, Morsink, & Algozzine, 1988; Ysseldyke, O'Sullivan, Thurlow, & Christenson, 1989). Given these similarities, it is argued, there is really no need for differential classification of these groups or differential educational placement.

While commonalities in those teaching methods that work best have implications for how one should train those who will teach such children, they do not necessarily imply that the groups are not different in how they learn, their level of learning ability, and their optimal levels of cognitive ability. Such differences, if present, must also have implications for whether or not children currently classified as mildly mentally retarded (MMR) or LD are best grouped together into a single classification, with the implication of nondifferential teaching practices or whether the two classifications reflect different groups with respect to placement and educational programming.

We know that by definition LD children must have a more specific cognitive disability than do MMR children. This is reflected in the different IQ constraints included in the definitions of the two groups; one must have a full score IQ in the normal range (and preferably no more than 1 SD below the mean) while the other must have an IQ score more than 2 SD below the mean. Different optimal levels of learning are implied, as are differential breadths of cognitive impairment.

Presented in this poster are data comparing these two groups to each other, and to their CA normally achieving (NA) peers on several different cognitive tasks.

General Information

1. In all 4 studies, participating students were from 6 through 8 years of age.

2. Students were selected from schools in the Dade County Public School System.

3. All LD students were so classified and had IQ scores > 85(range =86-125).

4. All MMR students were in EMH classes and had IQ score between 50-69.

5. Before all experimental tasks, the students were pretrained.

6. Prior to combining exceptional groups, ANOVAs were computed to assess the contribution of ethnicity and sex (Studies 1-3). There were no significant main effects or interactions associated with either of these variables.

7. For study 4, ethnicity was evaluated using nonparametric procedures due to the minimal number of responses generated by the MMR group. There were no significant effects of ethnicity.

Study 1

Scott, M.S., Greenfield, D.B., and Partridge, M.F. (1991). Differentiating Between Two Groups That Fail In School: Performance Of Learning Disabled And Mildly Retarded Students On Oddity Problems. Learning Disabilities Research, 6, 3-11.

Sample: 37 LD matched on CA to 37 MMR plus their NA peers (74) matched on age, ethnicity and sex.

Procedure: Find the different stimulus.

Stimuli: Eight different types of oddity problems.

1. Object-Class: brown high heel (shoe) vs. blue flat (shoe) vs. tie.

2. Missing element: three line drawings of clowns, one without a bell on the end of his cap.

3. Identity-Similarity (IS) and Similarity-Difference (SD):
   IS = Porky Pig sitting vs. Porky Pig sitting vs. Porky Pig flying.
   SD = Donald Duck raking leaves vs Donald Duck reading a book vs. Pluto diving.

4. Color, Form, Size:
   Color = small red square vs. large red circle vs. medium yellow triangle. (form and size variable and irrelevant)

5. Orientation:
   Vertical - king (upside down) king (upside down) house (right side up).

   Horizontal - parrot (facing left) vs. parrot (facing right) vs. parrot (facing left).

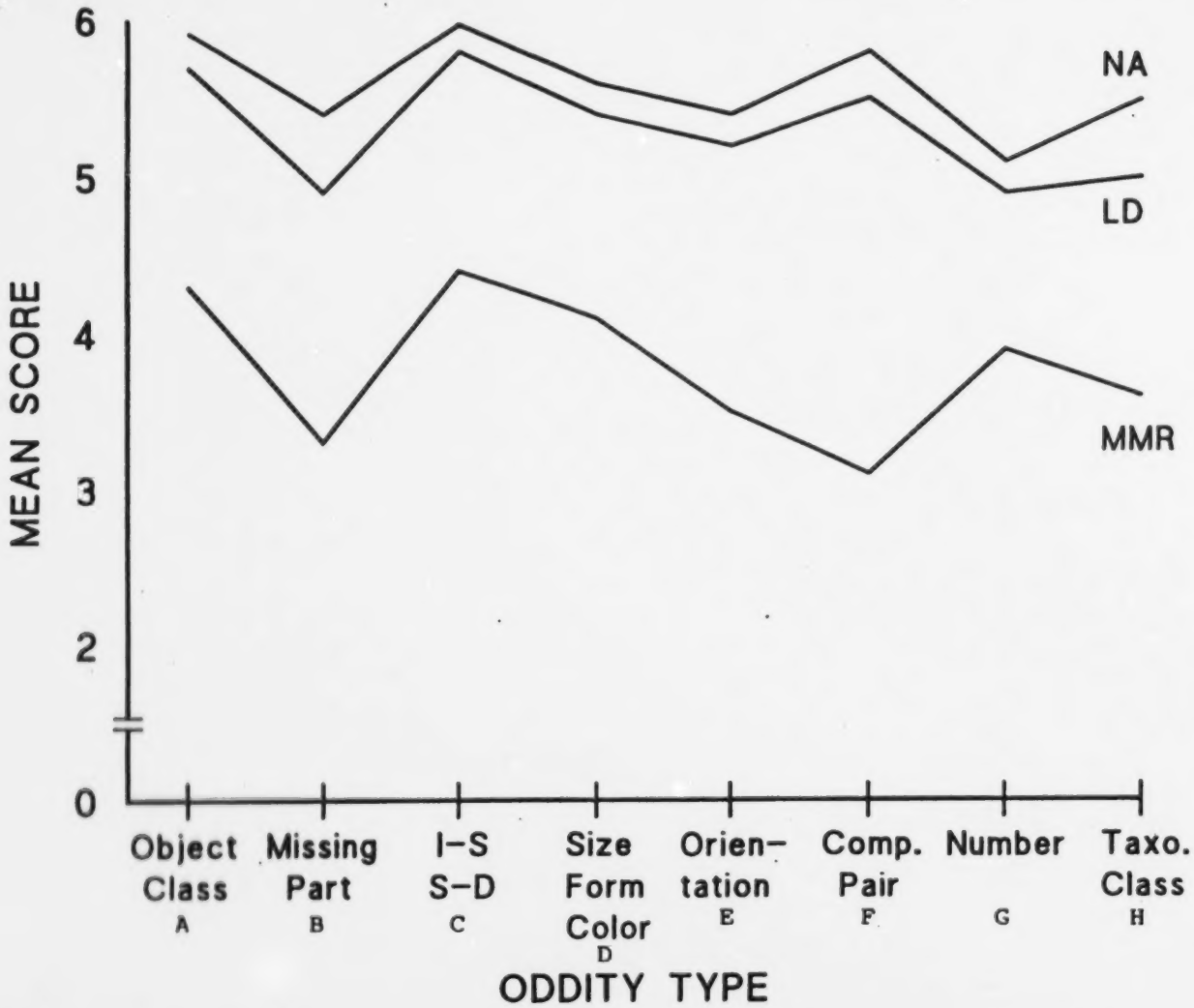
6. Complementary pair: nest vs. flag vs. bird

7. Number: 3 roses vs. 2 cookies vs. 2 cookies
   4 bladed propeller vs. 4 bladed propeller vs. flower with 5 petals.

8. Taxonomic: elephant vs. zebra vs. elephant
   ax vs. saw vs. saw

Results: See Figure 1.

Figure 1. From Scott, Greenfield, and Partridge, 1991.



All MMR vs. LD sig. ps < .001; All MMR vs. NA sig. ps < .001; NA vs. LD sig. only A,B,C,F,H, ps < .05.

Study 2

Scott, M.S., Perou, R. Greenfield, D., Partridge, M.F., and Swanson, L. (1993). Comparison Of Normally Achieving, Mildly Retarded And Learning Disabled Students On A Perceptually Based Oddity Task. Journal of Developmental and Physical Disabilities, 5(2), 129-150.

Sample: 28 LD matched one A to 28 MMR students plus their NA peers (56) matched on age, ethnicity and sex.

Procedure: Find the different stimulus.

Stimuli: Number difference oddity presented in order from level = 1 letter groups up through level 7 = letter groups. (see Table 1).

Results: See Table 2 and Figure 2.

Table 1

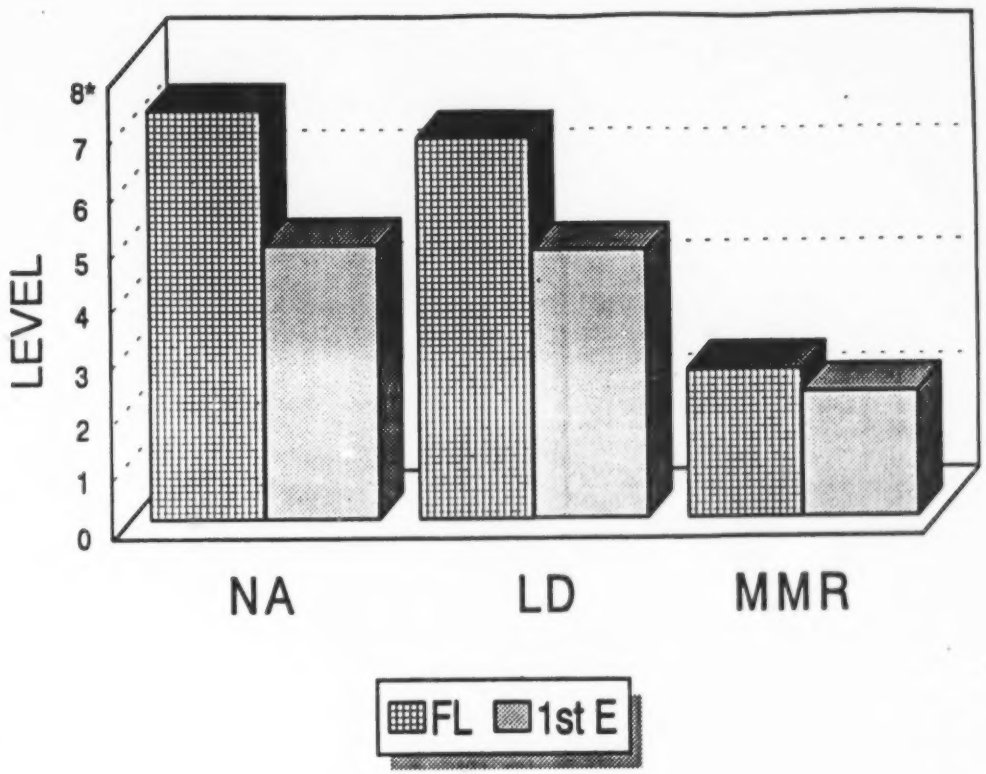
Two Examples of Oddity Arrays Used at Each of the Seven Levels

Level	Examples		
1	i	r	r
	u	u	d
2	ae	ae	oe
	ld	bd	ld
3	vwx	vwm	vwx
	yjt	ijt	ijt
4	cuob	cuob	cuhb
	vwmh	vwmh	vwmn
5	gqpyj	gqpij	gqpyj
	lhnod	khnod	khnod
6	zedfjp	zedfip	zedfip
	sgwkbc	sgwkhc	sgwkbc
7	ytsaoux	ytsaoux	ytsaoux
	fmlebnh	fwlebnh	fmlebnh

From Scott et al., 1993.

Letters were red, 1.91 cm in lower case pasted on 21.6 x 33.0 cm white posterboard. There were 6 cards representing each level.

Table 2



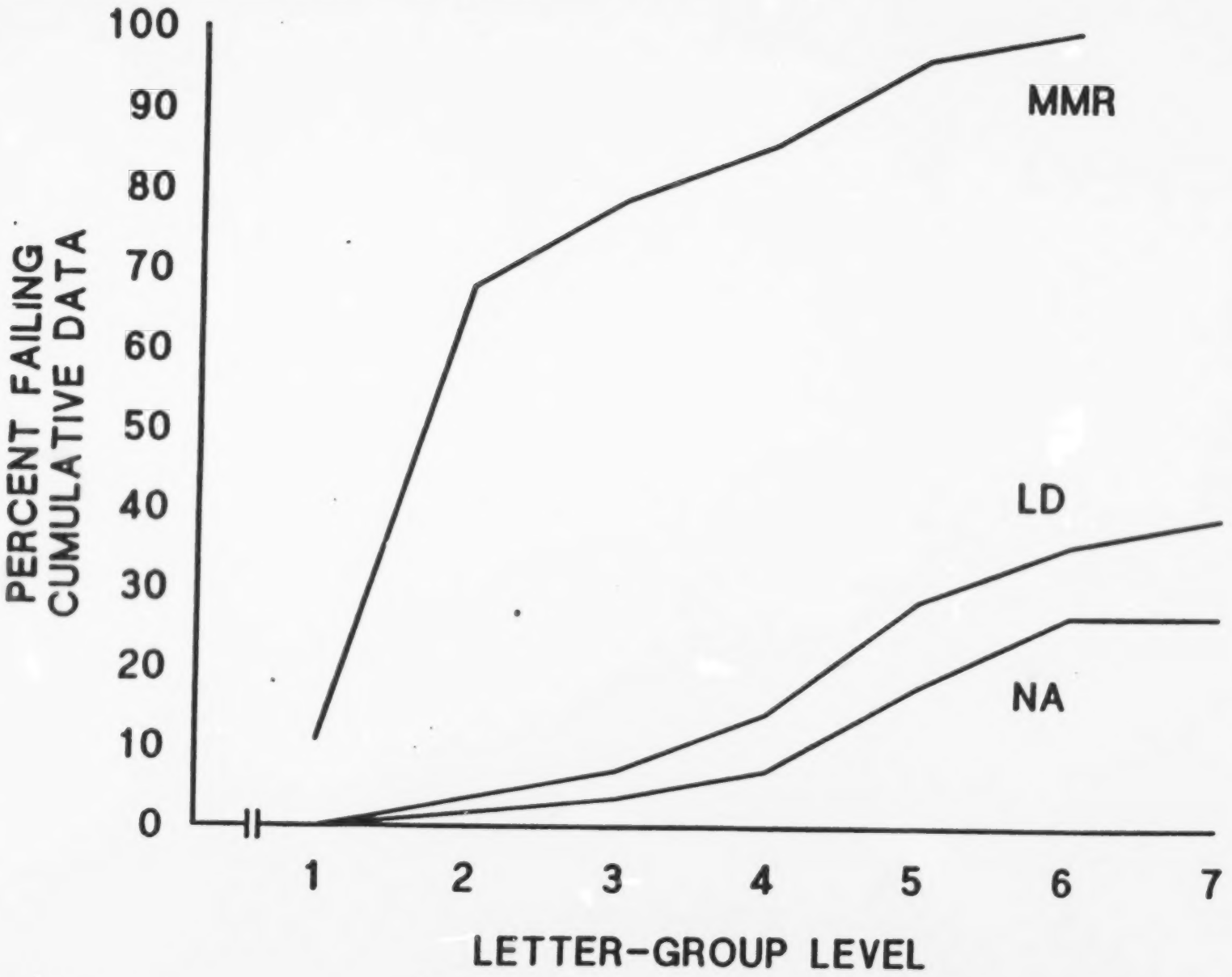
*Score given to all students who did not fail the task.

1. Groups sig. $p < .001$ failure level measure (FL)
   Groups sig. $p < .001$ level of 1st error measure (1st E)
   Follow-up Scheffé = MMR < LD = NA both measures.

2. Using difference scores (failure level - level of 1st error)
   ANOVA of groups sig., $p < .001$
   Follow-up Scheffé MMR (.43) < LD (2.0) = NA (2.4), at $p < .05$ significance level.

3. 64% of MMR students failed at the same level they made their 1st error, but only 7% of LD and 11% of NA students did so.

Figure 2. From Scott et al., 1993



Study 3

Scott, M.S., and Greenfield, D.B. (1992). A Comparison of Normally Achieving, Learning Disabled and Mildly Retarded Students On A Taxonomic Information Task. Learning Disabilities Research, 7, 59-67.

Sample: 25 LD matched on CA to 25 MMR students plus their NA peers (50) matched on age, ethnicity and sex.

Stimuli: Four exemplars of each of 12 categories pasted onto 22.5 x 27.5 cm red posterboard cards. The 12 categories were: animals; body parts; fruit; furniture; people; tools; musical instruments; vegetables; clothing; jewelry; vehicles; and toys.

Procedure: Students were asked to name categories, name exemplars, describe similarities among category exemplars and describe differences among exemplars category.

Results: See Table 3 and 4.

Table 3

Mean and SD of All Four Dependent Measures for All Three School Groups

School Group	N	Dependent Measures: Category Labels		Number of Exemplars		Number of Same		Number of Differences	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
NA	50	9.7	1.8	39.3	4.4	15.3	9.0	21.9	8.8
LD	25	8.9	2.0	36.7	5.4	11.6	8.8	14.3	8.1
MMR	25	3.9	2.7	28.6	7.0	4.3	4.2	2.8	5.3

NA > MMR all 4 measures, ps < .001; LD > MMR all 4 measures, ps < .001; NA > LD #of exemplars and number of different descriptors only, ps ≥ .03.

Table 4

Number and Percentage of Students Generating More Same or More Different Responses

Group	More Same: Number	Percentage	More Different: Number	Percentage	
NA	8	17	39	83	sig. p < .001
LD	9	36	16	64	ns
MMR	15	88	2	12	sig. p < .001

From Scott and Greenfield (1992).

Study 4

Scott, M.S., Perou, R., Greenfield, D.B., and Swanson, L.J. (1993). Rhyming Skills: Differentiating Among Learning Disabled, Mildly Retarded and Normally Achieving Students. Learning Disabilities Research and Practice, in press.

Sample: 27 LD matched on CA to 27 MMR students.

Procedure: Students were asked to generate real and fake rhymes to the 4 probes.

Stimuli: Four verbal probes: fan; hat; mouse; and steam.

Results: See Tables 5 and 6.

Table 5

Percentage of Students Who Failed to Generate a Single Acceptable Rhyme as a Function of Response Type and Group

	Groups		
Rhyme Type	NA	LD	MMR
Real	6	9	79
Fake	20	15	100

From Scott, Perou, Greenfield and Swanson (in press).

Table 6

Mean Performance of the MMR and LD Groups on Two Dependent Measures.

Group	# Real Rhymes [a]	# Fake Rhymes [b]
MMR	0.3 [c]	0.0
LD	8.8	5.5

a,b MMR < LD using Kruskal-Wallis nonparametic tests, ps < .001 (corrected for ties).

c Only 7 students generated > 0 real rhymes: 3 generated 1 real rhyme; 4 generated 2 rhymes.

Discussion

The pattern common to all of the studies is that one finds little difference between the level and/or quality of performance of the NA and LD groups, but large level and/or quality difference between the LD and a CA comparable MMR group.

These data would seem to indicate that children labeled LD and those labeled MMR are cognitively quite different, validating their differential classification, and that different educational programming may be required to maximize the impact of the interventions to each group. Whether such can best be met in the same special or regular classroom is not as clear.

These four studies are discussed in greater detail in Scott, M.S., and Perou, R. (in press). Some observations on the impact of learning disabilities and mild mental retardation on the cognitive abilities of young grade school children. In T.E. Scruggs and M.A. Mastropieri (Eds.), Advances in learning and behavioral disabilities. Greenwich: JAI Press.